UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/748,188	12/27/2000	Tadayoshi Iijima	P107424-00019	2973

23353 7590 10/18/2002

RADER FISHMAN & GRAUER PLLC
LION BUILDING
1233 20TH STREET N.W., SUITE 501
WASHINGTON, DC 20036

EXAMINER	
UHLIR, NIKOLAS J	
ART UNIT	PAPER NUMBER
1773	14

DATE MAILED: 10/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/748,188	IIJIMA, TADAYOSHI	
	Examiner	Art Unit	
	Nikolas J. Uhlir	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3 and 8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3, 8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 12 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In the instant case, claim 8 as written requires a transparent conductive film "having conductive fine particles and a resin" in the 2nd line of the claim. This first limitation indicates that the transparent conductive film must contain at least a binder and conductive fine particles. However, line 4 of claim 8 further defines the transparent conductive film as containing "9.3 parts by volume **or less** with respect to..." The phrase "9.3 parts by volume or less" indicates that a transparent conductive film containing 0-9.3 parts by volume resin is acceptable. It is unclear to the examiner how a transparent conductive film containing "conductive fine particles **and** a resin" can be manufactured if a transparent conductive film containing 0% resin is acceptable. Clarification is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kimura (JP10258486) in view of Kawata et al (US5662962).

5. The applicant is respectfully reminded that copies of Kimura and Kawata et al. accompanied the prior office action dated 4/16/02.

6. Regarding the limitations of claim 1, wherein the applicant requires a transparent conductive film comprising a compressed layer of conductive fine particles obtained by compressing a layer containing conductive fine particles that is formed by application onto a support, wherein the compressed layer of the conductive fine particles contains a resin at the time of compression, the resin being contained at an amount of 9.3 parts by volume or less with respect to 100 parts by volume of conductive fine particles, and the compressed layer of conductive fine particles is impregnated with a transparent substance after compression.

7. The limitations "compressed layer...obtained by compressing," "formed by application," "contains a resin at the time of compression... 100 parts by volume of conductive fine particles," "impregnated... after compression," present in claim 1 are product-by-process limitations and do not appear to be further limiting in so far as the structure of the product is concerned. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964,

966 (Fed. Cir. 1985). See MPEP § 2113. In the instant case, the final product claimed comprises a transparent conductive film on a support, wherein the transparent conductive film comprises conductive fine particles and a transparent substance. A transparent film meeting the end product limitations could have could be formed by another method other than the required compression method, such as through coating a transparent conductive ink on a substrate and heating the ink at such a temperature so as to fuse the conductive particles to each other, followed by impregnating the film with a transparent substance. Regarding the limitation in claim 1 wherein the applicant requires the compressed layer of conductive fine particles to contain a resin at the time of compression, wherein the amount of resin is 9.3 parts by volume or less based on 100 parts by volume of conductive fine particles. This limitation is a product by process limitations because it is an **intermediate step** in a process to form a **final product**. Thus, the amount of resin contained in the final product is not necessarily the same as the amount contained in the intermediate step. This is supported by the fact that on page 27 of the specification, the applicant lists organic resins as suitable materials for impregnating the transparent conductive film after it is formed. Thus, the final product as claimed could contain more than the required 9.3 parts by volume of resin recited for the intermediate step. Therefore, a final product containing **any** amount of resin (including no resin at all) reads on the limitations of the final product.

8. With respect to the limitations of claim 1, Kimura teaches a transparent conductive film that is comprised of a thin layer of Indium Tin Oxide (ITO) containing ink composition that has been formed onto a transparent resin film support (Page 3, section

0004). The transparent film support is typically polyethylene terephthalate (PET). The ITO ink composition is composed of 10-30% by weight of ITO micro-powder (equivalent to applicants claimed conductive fine powder), 1-6% by weight resin, and 64-89% by weight solvent (page 5, section 0007). Last, Kimura teaches that after the conductive ink is applied to a support it is treated with a calendaring process (section 004).

9. Kimura does not teach impregnating the ITO film with a transparent substance, as required by claim 1.

10. However, Kawata et al teaches a transparent electro-conductive substrate that is comprised of a transparent support, a transparent electro-conductive film formed on the surface of the support, and an overcoat film formed on the transparent electro-conductive film. The transparent electro-conductive film is typically comprised of ultrafine ITO particles dispersed in a binder, and the overcoat film is typically a silica or silica sol (Column 1, line 60-column 2, line 34). The overcoat layer penetrates between the gaps and pores (equivalent to "impregnated") in the transparent conductive film, and improves the optical, conductive, and strength properties of the film (column 4, lines 18-30 and column 4 line 66-column 5 line 3). The overcoat film can be cured at temperatures as low as 150-180^0 C. (column 4, lines 40-44 and column 5, lines 24-26).

11. Therefore it would have been obvious to one with ordinary skill in the art at the time the invention was made to coat the porous ITO layer taught by Kimura with the silica or silica sol material taught by Kawata et al.

12. One would have been motivated to make this modification due to the better optical, conductive, and strength properties of the film that one would expect to gain as a result.

13. Regarding the limitations of claim 2, wherein the applicant requires a transparent conductive film according to claim 1, wherein the layer containing the conductive fine particles is formed by applying a dispersion liquid, which contains the conductive fine particles and the resin, onto a the support and drying the liquid, said resin being contained at an amount of 73 parts by volume or less with respect to 100 parts by volume of said conductive fine particles before dispersion.

14. The limitations "formed by applying a dispersion liquid," "drying the liquid," "and said resin being contained at an amount of...before dispersion," present in claim 2 are a product-by-process limitations and do not appear to be further limiting in so far as the structure of the product is concerned. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP § 2113. I the instant case, a transparent conductive film meeting all of the final product limitations could have been formed by another method other then through applying a dispersion liquid to a support, such as through a spray coating method or a vapor deposition method. Further, the limitation that the resin

is contained at an amount of 73 parts by volume or less with respect to 100 parts by volume of said conductive fine particles before dispersion is a product by process limitation because it is a **intermediate** step in a process to form a **final product**. Thus, the amount of resin contained in the final product is not necessarily the same as the amount contained in the intermediate step. This is supported by the fact that on page 27 of the specification, the applicant lists organic resins as suitable materials for impregnating the transparent conductive film after it is formed. Thus, the final product as claimed could contain more than the required 9.3 parts by volume recited for the intermediate step. Therefore, a final product containing **any** amount of resin (including no resin at all) reads on the limitations of the final product.

15. With respect to the limitations of claim 2, it is the examiners position that these limitations have been met as set forth above for claim 1.

16. Regarding the limitations of claim 3, wherein the applicant requires the substrate to be formed from a resin material. This limitation is met as set forth above for claim 1, as Kimura teaches applying a transparent conductive film to a resin material such as polyethylene terephthalate as stated above.

17. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawata et al. (US5662962).

Regarding the limitations of claim 8, wherein the applicant requires a transparent conductive film comprising a compressed layer having conductive fine particles and a resin, said compressed layer and a resin, wherein the compressed layer is formed by compressing the conductive fine particles and the resin onto a support, wherein the

resin is contained at an amount less than 9.3 parts by volume with respect to 100 parts by volume the conductive fine particles, and the compressed layer is impregnated with a transparent substance after compression.

18. The limitations "formed by compressing the conductive fine particles and the resin on a support," and "wherein said compressed layer is impregnated with a transparent substance after compression" are product-by-process limitations and do not appear to be further limiting in so far as the structure of the product is concerned. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP § 2113. In the instant case, a transparent conductive film meeting all of the final product limitations required by claim 8 could be formed by another process other than compressing a layer containing conductive fine particles and a resin on a support followed by impregnating the layer with a transparent substance, such as through applying a solution containing a precursor to a transparent substance, a binder resin, and conductive fine particles to a support to form a support coated with a layer, followed by compressing and heating the layer coated support in such a manner so as to convert the precursor to a transparent substance to a transparent substance.

19. For the purpose of this investigation, the examiner has interpreted claim 8 to require a transparent conductive film on a support, wherein the transparent conductive film contains conductive fine particles, 0-9.3 parts by volume of a resin, and a transparent impregnating material.

20. With respect to the limitations of claim 8, Kawata et al teaches a transparent electro-conductive substrate that is comprised of a transparent support, a transparent electro-conductive film formed on the surface of the support, and an overcoat film formed on the transparent electro-conductive film. The transparent electro-conductive film is typically formed by applying a conductive ink containing ultrafine ITO particles (equivalent to applicants claimed conductive fine particles), a thermoplastic binder, and a solvent onto the surface of a support (column 3, lines 20-33). Although Kuwata et al. does not teach the specific amount of binder resin in the ink, Kuwata et al. does teach that the amount of thermoplastic binder is used to control the viscosity of the ink solution (column 3, lines 25-26). Therefore, the examiner takes the position that the amount of thermoplastic resin the in the ink solution is a results effective variable, and it would have been obvious to one with ordinary skill in the art to change the amount of resin in the ink solution so as to obtain a desired viscosity. Further, Kuwata teaches over coating the transparent conductive layer with a layer of silica, or silica sol, which penetrates between the gaps (equivalent to applicants impregnates) and increases the optical, conductive, and strength properties of the film (column 4, lines 18-30 and column 4 line 66-column 5 line 3).

Response to Arguments

21. Applicant's arguments filed 8/20/02 have been fully considered but they are not persuasive. In the instant case, with respect to the rejection of claims 1-3, the applicant made the following arguments (summarized)

- The applicant argued that the minimum amount of binder resin taught by Kimura et al. was 16.4 parts by volume, and thus does not meet the limitations of claim 1 as amended.
- The applicant argued that one with ordinary skill in the art would not have been motivated to coated the transparent conductive film of Kimura with the silica sol over coat taught by Kawata et al. as Kuwata et al requires a baking process at temperatures of 400^{0}C or higher to dry the overcoat, which would result in burning, melting, or carbonization of the resin support.

22. These arguments are not persuasive. Regarding the applicant's argument regarding the minimum amount of binder. This argument is moot in view of the new grounds of rejection. Regarding the argument that one of ordinary skill in the art would not have been motivated to combine Kuwata et al. with Kimura due to the fact that Kimura teaches a firing/baking step at temerpatures >400^0 C, which would result in destruction/deformation of the substrate taught by Kimura. The examiner acknowledges that Kuwata et al. teaches a firing/baking step at temperatures higher than 400^0 C to form a transparent conductive film having a specific resistance of approximately 0.01-0.5Ω·cm (column 5, lines 28-36). However, Kuwata et al. also teaches that a low-resistance, transparent, electrically conductive film can be obtained even when the over coating film is cured at temperatures as low as 150-180^0 C (column 5, lines 24-26). This temperature is well within the processing temperatures of resin materials, particularly polyethylene terephthalate (as utilized by Kimura), which is known to have a melting point between 243-260^0 C. Thus, combined with the benefits of the overcoat as stated above, there is clear motivation to over coat the transparent conductive film of Kimura with the silica sol of Kuwata, even though Kimura is on a resin substrate.

Conclusion

23. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nikolas J. Uhlir whose telephone number is 703-305-0179. The examiner can normally be reached on Mon-Fri 7:30 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on 703-308-2367. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-0389.

nju
October 15, 2002

STEVAN A. RESAN
PRIMARY EXAMINER